Cumberland Co. 26-02
1997

8

1997

26021997

State of North Carolina
Department of Environment
and Natural Resources
Division of Waste Management

James B. Hunt, Jr., Governor
Wayne McDevitt, Secretary
William L. Meyer, Director

December 3, 1997

Mr. Frank Rawls
Chief, Environmental Branch
AFZA-DW-DV
Fort Bragg, NC 28307

Re: Full Approval of the Transition Plan for the Fort Bragg MSW Landfill, Permit Number 26-02

Dear Mr. Rawls:

The Division of Waste Management has completed its review of the transition plan for the referenced landfill submitted by the consultants, RS&H Architects, Engineers, Planners, Inc. and Stimmel Associates on behalf of the owner and operator, Fort Bragg.

Rule .1603(a)(4)(A) of the solid waste management rules codified at 15A NCAC 13B requires the owner and operator of an existing MSWLF unit to submit a transition plan application for continuing operation and closure of the existing MSWLF unit by April 9, 1994. Rule .1617(d) requires that the plan contain: an operation plan in accordance with Rule .1625, a closure and post-closure plan in accordance with Rule .1629, a water quality plan in accordance with .1623(b)(3), and a report that contains a schedule for closure of the existing MSWLF unit and, if necessary, submittal of an application for a new facility, a lateral expansion or permit renewal.

In accordance with Rule .1603(d)(2), the Division has completed its review of the submitted application as amended through November 8, 1997, and hereby issues full approval of the transition plan for the referenced landfill. See the attached List of Approved Documents.

The approved transition plan shall be effective through December 1997, or until the permitted contours are reached. Rule .1625(b)(3)(C) requires that operation drawings illustrate annual phases of development which are consistent with the minimum and maximum closure slope requirements. In accordance with this rule and Rule .1627(c)(10)(A), the existing unlined MSWLF unit shall be operated in such a manner as to cease receiving solid waste on or before January 1,1998, regardless of the approved final contours.

One complete set of transition plan drawings and the groundwater monitoring plan are being sent to Fort Bragg and one complete transition plan is being sent to the Solid Waste Section Fayetteville Regional Office. If there are any questions or comments, please contact Susan Leistiko @ (919) 733-0692, extension 262.

Sincerely,

James C Coffey

James C. Coffey, Head
Permitting Branch
Solid Waste Section

cc: Dexter Matthews
Terry Dover
Ikie Guyton
Susan Leistiko

C:\WRIGHT\PROJECTS\TRANPLAN\FT_BRAGG\TRANPLAN.APR

List of Approved Documents

The following documents are hereby approved and made part of the permitting record on file with the Solid Waste Section. Where discrepancies may exist, the most recent approved submittal shall govern.

1. Transition Plan for Sanitary Landfill, Department of the Army, Fort Bragg, dated May 18, 1994 and revised December 21, 1994, September 4, 1996, October 6, 1997 and November 8, 1997.

2. Transition Plan for Sanitary Landfill Drawings dated May 19, 1994 and revised July 26, 1994.

3. Longstreet Road MSWLF Closure Plan, Fort Bragg sealed on July 11, 1997.

4. Groundwater and Surface Water Monitoring Plan for Longstreet Road Municipal Solid Waste Landfill Facility (Unlined) dated September 7, 1995.

Central Files
#26-02

DEPARTMENT OF THE ARMY
HEADQUARTERS, XVIII AIRBORNE CORPS AND FORT BRAGG
FORT BRAGG, NORTH CAROLINA 28307-5000

November 26, 1997

REPLY TO
ATTENTION OF:

Public Works Business Center

Mr. Terry Dover
North Carolina Department of Environment
and Natural Resources
Solid Waste Management Division, Eastern Region
Wachovia Building, Suite 601
225 Green Street
Fayetteville, NC 28301-0601

Dear Mr. Dover:

Per 15A NCAC 13B.1627(b)(4), we wish to advise you that Fort Bragg intends to close its municipal solid waste landfill (permit number 26-02) on December 31, 1997, and we will then dispose of our municipal solid waste at a regional disposal facility. Closure activities will begin before the end of January.

We are applying separately for a permit for a new construction and demolition landfill for disposal of asbestos and construction and demolition debris, as well as for a permit for a waste transfer station.

For further information, please contact Mr. Bill Squire at (910) 396-3372.

Sincerely,

/s/ for LTC, EN
Robert L. Shirron
Colonel, U.S. Army
Director of Public Works
Business Center

November 8, 1997

Ms. Susan Lestiko
State of North Carolina
Department of Environmental Health
and Natural Resources
Division of Solid Waste Management
P.O. Box 27687
Raleigh, NC 27611-7687

Reference: Fort Bragg Landfill Cap Design

Dear Ms. Lestiko:

In response to your letter dated 10/22/97 to Michael J. Ackerman, Chief Environmental Branch Fort Bragg DPWE, we offer the following:

1. Chapter 7 - Closure Plan was revised to state 24-inches of cover is to be provided over the GCL. Revised Chapter 7 is included for your review.

2. The slopes of the sides of the landfill will be 5:1 or less. We believe that these relatively flat slope will be stable as designed. We have provided flatter slopes than exist at the landfill in order to ensure slope stability.

3. Cell 1 was not included to be capped prior to the present requirements taking affect. The area is capped with a minimum of 2-feet of native material. We have discussed this issue previously with Jim Barber of your Fayetteville office. He has reviewed this issue, and told us that Cell 1 does not need to be capped.

Please review our response to your comments, and let us know if you have any questions.

Sincerely,
STIMMEL ASSOCIATES P.A.

Patrick C. Jennings II, PE
Project Manager

pc. George Whitley

STIMMEL
ASSOCIATES, P.A.
LANDSCAPE ARCHITECTURE
LAND PLANNING
CIVIL ENGINEERING
305 WEST FOURTH ST., SUITE 1-A
WINSTON-SALEM, NC 27101
PHONE (910) 723-1067
FAX (910) 723-1069

State of North Carolina
Department of Environment
and Natural Resources
Division of Waste Management

James B. Hunt, Jr., Governor
Wayne McDevitt, Secretary
William L. Meyer, Director

October 22, 1997

Mr. Michael J. Ackerman
Chief, Environmental Branch
AFZA-DW-DV
Fort Bragg, NC 28307

RE: Technical Review, Fort Bragg Landfill, Permit No. 26-02,
Fort Bragg Landfill Cap Design

Mr. Ackerman:

The Solid Waste Section (Section) recently performed a technical review of the referenced alternative cap design evaluation submitted by Stimmel Associates on behalf of Fort Bragg. Based on its preliminary review, the Section needs the following additional information from Stimmel Associates.

1. Chapter 7 - Closure Plan. Text in the second and third paragraphs disagree. The second paragraph states that there will be 24 inches of cover soil on top of the GCL. The third paragraph states that there will be 36 inches of cover over the GCL. Which is correct? Revise all text to be consistent.

2. Will the cap system be stable on the slopes or will the cover soil wash off? Will there be any buttressing of soil at the toe of the slopes to make them more stable? Discuss slope stability.

3. Drawing DPWE-5677 shows the limits of the cap. Why is Cell 1 not included in the area to be capped? If this area is not to be capped then what type of cover is on this area now? Is this area certified closed?

Please submit requested information or revisions to the Section as soon as possible to expedite review of the referenced transition plan application. Requested information or revisions should be submitted in accordance with Rule .1603(b). The Section reserves the right to request any additional information during the technical review process. If you have any questions regarding this matter, please contact me at (919) 733-0692 ext 262.

Sincerely,

Susan W. Leistiko

Susan W. Leistiko
Environmental Engineer

cc: Patrick Jennings - Stimmel Terry Dover - DWM Ikie Guyton - DWM

October 6, 1997

Ms. Susan Lestiko
State of North Carolina
Department of Environmental Health
and Natural Resources
Division of Solid Waste Management
P.O. Box 27687
Raleigh, NC 27611-7687

Reference: Fort Bragg Landfill Cap Design
HELP Model Results

Dear Ms. Lestiko:

Enclosed are the results of two HELP models prepared for the proposed cap system at Fort Bragg. We have modeled two scenarios as follows:

• Regulatory Minimum Cap (RMC)	6-inches topsoil	18-inches clay (1×10^{-5})
• Geosynthetic Clay Liner (GCL)	24-inches topsoil	GCL (3×10^{-7})

The various rainfall, evapotranspiration, etc. data is noted in the attached HELP output. We assumed an average ground slope of four percent for the RMC per DEHNR requirements. The actual ground slope of the top of the landfill is at a minimum grade of approximately two percent, as such a two percent ground slope was used for the GCL. See output data for other criteria used for each model.

As noted in the summary on the last page of each output data the percolation rates (or leakage through the proposed cap) are as follows:

• Regulatory Minimum Cap (RMC)	0.45-inches
• Geosynthetic Clay Liner (GCL)	0.02-inches

The use of the GCL is well justified by the order of magnitude improvement in percolation of surface water through the two cap systems.

Please review the attached data, and let us know if you have any questions.

Sincerely,
STIMMEL ASSOCIATES P.A.

Patrick C. Jennings II, PE
Director of Civil Engineering

pc. George Whitley

STIMMEL
ASSOCIATES, P.A.
LANDSCAPE ARCHITECTURE
LAND PLANNING
CIVIL ENGINEERING
305 WEST FOURTH ST., SUITE 1-A
WINSTON-SALEM, NC 27101
PHONE (910) 723-1067
FAX (910) 723-1069

STIMMEL ASSOCIATES, P.A.
LANDSCAPE ARCHITECTURE • LAND PLANNING • CIVIL ENGINEERING
305 WEST FOURTH STREET, SUITE 1-A WINSTON SALEM, NC 27101
PHONE (910) 723-1067 FAX (910) 723-1069

LETTER OF TRANSMITTAL DATE: **10/6/97** JOB NO. **96058**

TO: **North Carolina DEHNR**
Division of Solid Waste Management
P.O. Box 27687
Raleigh, NC 27611-7687

Landfill Cap System Fort Bragg

ATTN: **Susan Lestiko**

OCT 1997
Received
Solid Waste
Secti-

We are sending you ● attached O under separate cover via _____ the following:
O shop drawings ● prints O plans O samples O specifications
O letter O change order O _____

Copies	Date	Description
1		**Cap System Specifications**
1		**Chapter 7 - Closure Plan for Landfill**
1		**Chapter 8 - Post Closure Plan for Landfill**
1		**HELP Model and Explanation**

These are transmitted as checked below:
● for approval O as requested O for your information
O for your use O for review O _____

REMARKS: **The items were noted as required by you in a conversation with George Whitley of DPWE Fort Bragg. Please let us know if you need further data to approve the Cap System Plans.**

IF ENCLOSURES RECEIVED ARE NOT NOTED, KINDLY NOTIFY US AT ONCE.

COPIES TO: **George Whitley** BY: **Patrick C. Jennings II**

State of North Carolina
Department of Environment,
Health and Natural Resources
Division of Waste Management

James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
William L. Meyer, Director

DEHNR

September 12, 1997

MEMORANDUM

TO: Michael Kelly, Deputy Director
Division of Solid Waste Management

FROM: Philip J. Prete, Head
Field Operations Branch

Subject: Hot Cargo Pads, Pope Air Force Base, [redacted] County
Environmental Assessment Study

The Solid Waste Section has reviewed the attached project proposal and has seen no adverse impact on the surrounding community and likewise knows of no situations in the community which would affect the project.

Pope Air Force Base should make every feasible effort to minimize the generation of waste, to recycle materials for which viable markets exist, and to use recycled products and materials in the development of this project where suitable. As was indicated in the environmental assessment, waste generated by this project may be disposed of at the Fort Bragg Municipal Solid Waste Landfill on Long Street.

Questions may be directed to Mr. Ikie Guyton, Waste Management Specialist, Solid Waste Section, at (910) 486-1191.

PJP/lcf

cc: Ikie Guyton

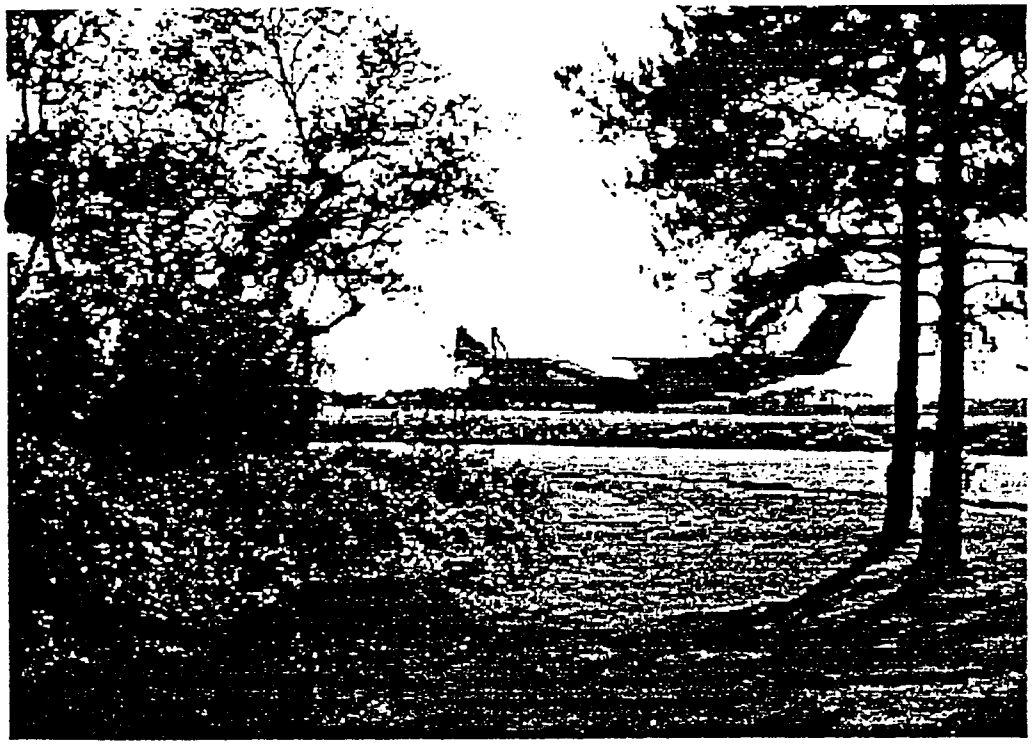
P.O. Box 27687,
Raleigh, North Carolina 27611-7687
Voice 919-733-4996

NC Reduce Reuse Recycle

FAX 919-715-3605

Environmental Assessment for Hot Cargo Pads

Pope Air Force Base, North Carolina Preliminary Draft



July 1997

Prepared for
43 CES/CEV

ENVIRONMENTAL ASSESSMENT
FOR
HOT CARGO PADS

Pope Air Force Base, North Carolina

Preliminary Draft
July 1997

1.0 INTRODUCTION 4

1.1 Purpose and Background 4

1.2 Mission Statement 4

1.3 Plan Organization 4

1.4 Installation Location 5

1.5 Installation History 5

2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES (DOPAA) 6

2.1 Proposed Action 6
2.1.1 Location of the Proposed Action 6
2.1.2 Project Description 6

2.2 Alternatives 7
2.2.1 HCP Alternatives 7
2.2.2 Hurst Drive Alternatives 7

2.3 No Action Alternative 8

3.0 ENVIRONMENTAL SETTING 9

3.1 Physical Environment 9

3.1.1 Climate 9
3.1.2 Topography, Geology and Soils 9
3.1.3 Aquatic Systems 10
3.1.4 Water Quality 10
3.1.5 Air Quality 10
3.1.6 Sensitive Areas 10

3.2 Biological Resources 12
3.2.1 Fish and Wildlife 12
3.2.2 Vegetation 13
3.2.3 Threatened and Endangered Species 14

3.3 Cultural Resources 15
3.3.1 Cultural, Historic Areas of Importance 15
3.3.2 Recreational Areas 15

3.4 Socioeconomic Environment 16
3.4.1 Transportation Facilities 16
3.4.2 Sewerage Facilities 16
3.4.3 Water Supply 16
3.4.4 Energy Supply 16
3.4.5 Demography 16
3.4.6 Land Use 17
3.4.7 Medical Care and Emergency Facilities 17
3.4.8 Noise 17
3.4.9 Solid Waste 17
3.4.10 Communication Facilities 17

4.0 ENVIRONMENTAL IMPACTS 18

4.1 Physical Environment 18
4.1.1 Climate 18
4.1.2 Topography, Geology and Soils 18
4.1.3 Aquatic Systems 18
4.1.4 Water Quality 18
4.1.5 Air Quality 18
4.1.6 Sensitive Areas 18

4.2 Biological Resources 19
4.2.1 Fish and Wildlife 19
4.2.2 Vegetation 20
4.2.3 Threatened and Endangered Species 21

4.3 Cultural Resources 21
4.3.1 Cultural, Historic Areas of Importance 21
4.3.2 Recreational Areas 21
4.3.3 Schools and Religious Structures 21

4.4 Socioeconomic Environment 22
4.4.1 Transportation Facilities 22
4.4.2 Sewerage Facilities 22
4.4.3 Water Supply 22
4.4.4 Energy Supply 22
4.4.5 Demography 22
4.4.6 Land Use 22
4.4.7 Medical Care and Emergency Facilities 22
4.4.8 Noise 23
4.4.9 Solid Waste 23
4.4.10 Communication Facilities 23

5.0 SUMMARY OF ADVERSE ENVIRONMENTAL IMPACTS 25

6.0 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES 27

7.0 RELATION BETWEEN LOCAL SHORT TERM USES OF THE ENVIRONMENT AND THE EFFECT OF THE FACILITIES ON AVAILABLE OPTIONS FOR FUTURE USES 28

8.0 COMPLIANCE WITH ENVIRONMENTAL REQUIREMENTS 29

9.0 ENVIRONMENTAL COORDINATION 30

10.0 REFERENCES 31

1.0 Introduction

1.1 Purpose and Background

Pope Air Force Base (PAFB) is located northwest of Fayetteville, North Carolina in Cumberland County and Harnett Counties. The main portion of the installation is located within Cumberland County and the outlying marker sites are located within Harnett County. The entire installation is approximately 2,191 acres in size. The Air Force is proposing the construction of six hot cargo pads in order to maintain safety while also meeting the mission of the installation. In order to comply with the National Environmental Policy Act (NEPA), PAFB has determined that they must prepare an Environmental Assessment (EA). An EA is a concise public document briefly providing the evidence and analysis necessary to determine the effects of the proposed action on environmental resources in the vicinity of the action.

This EA includes brief descriptions of the proposed actions, environmental impacts of the proposed actions, alternatives, and a list of the agencies and private parties consulted. This document has been prepared in accordance with Council of Environmental Quality (CEQ) Regulations 40 CFR 1500-1508 and AR 200-2.

1.2 Mission Statement

The mission of PAFB Warriors is to be America's first call for combat airlift.

1.3 Plan Organization

This EA has been designed to identify any potential environmental consequences of the construction of the six hot cargo pads. The organization of this report is as follows:

- Chapter 1 provides a description of the purpose of the report, the report organization, the location of the installation, and the location of the proposed construction site.
- Chapter 2 gives a description of the need for the proposed action and the alternatives to the construction.
- Chapter 3 give descriptions of the physical, biological, cultural and socioeconomic environments of areas surrounding the proposed construction site.
- Chapter 4 provides a discussion of the environmental impacts associated with the project alternatives, including the no action alternative.
- Chapter 5 provides a discussion of the unavoidable environmental impacts and possible mitigation to compensate for these impacts.

- Chapter 6 examines the commitment of resources to the project.
- Short and Long Term uses of the Environment, Environmental Compliance and Environmental Coordination are discussed in Chapters 7, 8, and 9 respectively.
- References and a list of prepares is included in Chapters 10 and 11.
- Appendix A contains the North Carolina Natural Heritage letter.
- Appendix B contains a photo log of the project site and the surrounding area.

1.4 Installation Location

Pope Air Force Base, home of the 43rd Airlift Wing, is under Air Mobility Command (See Figure 1.0). It is situated north of Fayetteville, North Carolina and lies within the boundaries of the Fort Bragg Military Reservation. The residents of PAFB include two C-130 squadrons and two Air Combat Command A-10 squadrons.

1.5 Installation History

PAFB was developed on farmland acquired by the War Department in 1918 for a proposed artillery camp on Camp Bragg (now called Fort Bragg). Originally the land was used as a landing field for aircraft visiting Camp Bragg, called Pope Field.

2.0 Description of Proposed Action and Alternatives (DOPAA)

2.1 Proposed Action

The construction of additional cargo area to allow for the movement and handling training of dangerous explosive substances is required to support military operations of the 43rd Airlift Wing , Joint Special Operations Command, US Southern Command, 18th Airborne Corps, 82nd Airborne Division, and other US Forces. The proposed action includes the construction of six remote hazardous cargo pads (HCP) for the loading and unloading of explosives and dangerous cargo and the extension of taxiway Bravo from the pad area to the runway overrun. In order to accommodate the construction of the HCP and taxiway extension, the relocation of Hurst Drive will be necessary.

2.1.1 Location of the Proposed Action

Pope Air Force Base is located in Cumberland County, North Carolina (Figure 2-1). It lies within the incorporated limits of the city of Fayetteville. The HCP would be located in the south central portion of the base, to the east and parallel to Runway 05 (Figure 2-2). The foot print of the HCP is approximately 105 acres which includes the 488 meter (1,600 liner feet) extension of taxiway Bravo from the runway overrun to the HCP.

2.1.2 Project Description

The proposed action has been divided into three phases with the first phase being initiated in Fiscal Year 2000. Phase I includes the construction of 1 HCP and a taxiway for the loading and unloading of explosives and dangerous cargo. All constructed pads would be able to support fully loaded military and Civil Reserve Air Fleet (CRAF) wide bodied large frame aircraft. The pads would include hydrant refueling pits, electrical power pits to facilitate the quick turnaround of aircraft and lighting and pavement markings for each taxiway to aid in traffic control around the pads. Training and contingency operations require each pad to have six aircraft formations and multiples thereof. Construction of the pad requires the relocation of Hurst Drive during this phase.

Hurst Drive would be relocated around the HCP and connected to an existing dirt perimeter road that currently parallels the base boundary. This relocation would involve the upgrade of approximately 2,950 liner feet of the existing dirt perimeter road and the construction of approximately 650 liner feet of new roadway to connect to the existing paved roadway. Table 2-1 lists the upland and wetland impacts anticipated from each alternative. The new roadway will be 25 feet wide (2-10 ft. wide lands and a 2.5 ft. wide shoulder on each side of the roadway. Approximately 2850 ft. of the existing roadway will be covered by the HCP and the HCP apron. The remaining 1450 ft. of Hurst drive will be will be rough graded and reseeded once the new roadway is operable.

Phase II would be initiated in Fiscal Year 2001. This phase includes the construction of two HCP adjacent to the Phase I HCP and the extension of taxiway Bravo from the runway overrun to the HCP. The taxiway extension would be approximately 488 m (1,600 liner feet) long.

The third and final phase of the proposed project would be initiated in Fiscal Year 2002. It includes the construction of three HCP adjacent to the Phase II HCP.

2.2 *Alternatives*

2.2.1 *HCP Alternatives*

In November 1996, the Air Force Center for Environmental Excellence (AFCEE) conducted a Facility Siting Study at PAFB (AFCEE, 1996). The Hot Cargo Pads were considered as part of this siting study. The study looked at potential locations within the base boundaries where the hot cargo pads could be sited. Two locations were identified. One on the western portion of the existing aircraft parking area and one on the southeastern edge of the runway. Upon further review, the location on the western portion of the site was eliminated from consideration for the following reasons:

- HCP would extend beyond the boundary of PAFB,
- HCP would conflict with the Army Outload Enhancement Plan which is a multi-year funded project, Phase 1A of which is currently under construction;
- HCP construction will impact ranges on Fort Bragg.

Based on this study, no other suitable undeveloped or semi-improved grounds exist adjacent to the runway or within the boundaries of the installation to accommodate six HCP (AFCEE, 1996). Therefore, the proposed project site is the only area that exists adjacent to the existing runway that can provide a clear zone of at least 1,250 feet from the runway, fulfilling the criteria for the loading of Class 1 munitions without waivers.

2.2.2 *Hurst Drive Alternatives*

Two potential alternatives exist for the relocation of Hurst Drive. Both of the alternatives assume that the area to be cleared for new roadway construction will be 50 feet wide while that area cleared for modification of the existing perimeter road will be 25 feet. The alternatives are as follows:

Alternative No. 1 (See Figure 2-3)- A new section of road would be constructed approximately 700 feet from HCP No. 6. This roadway would be placed along the baase of the HCP apron and branch off of Hurst Drive in a southwestern direction for approximately 1,300 feet. Impacts from this alternative are included in the HCP arpon impacts discussion.

Alternative No. 2 (See Figure 2-4)- This alternative reroutes Hurst Drive from Reilly Road along the existing Perimeter Road. Approximately 2,950 feet of existing dirt roadway would be improved. The existing Tank Creek culvert would be upgraded. Immediately southeast of HCP No. 1 an additional 650 feet of new roadway would be constructed to connect this alternative into an existing paved roadway. This alternative will impact 0.17 acres of wetlands and 2.44 acres of uplands.

2.3 *No Action Alternative*

Under the No Action Alternative the proposed action would not occur. The Air Force would continue cargo loading on remote runways H, J, K, and L, located within the 1,000 foot safety clearance from the center line of the runway. Cargo loading in this location violates explosive Quality/Distance clearances. The installation would continue to operate under a waiver for safety procedures. However, because of safety violations identified during previous exercises, the base is prohibited from using safety procedure waivers during training operations. Therefore, under the No Action Alternative, munitions cargo loading training operations would not be rehearsed. The inability to perform a critical component of training operations would compromise the mission efficacy at PAFB. The No Action Alternative is not viable for both training and safety reasons.

3.0 Environmental Setting

The environmental setting includes the physical environment, biological resources, cultural resources, and the socioeconomic resources of the impact area and it's surrounding environs.

3.1 Physical Environment

The physical environment includes climate, topography, geology, soils, major aquatic systems, water quality, and air quality.

3.1.1 Climate

The climate on PAFB is influenced by its proximity to the ocean to the east and the mountains to the west. Summers at PAFB are generally hot and humid, while winters are cold but short in duration. The 24-hour average temperatures during the summer months and winter months is 89 and 44 degrees Fahrenheit, respectively. The first and last spring killing frosts occur on or around March 17 and November 12, respectively. The growing season is, therefore, approximately 210 days. Average yearly rainfall is 46.44 inches. (USDA, SCS, 1984)

3.1.2 Topography, Geology and Soils

Pope AFB lies within the Sandhills Subprovince of the Coastal Plain Physiographic Province (USDA, SCS, 1984). The Sandhills Subprovince is characterized by rounded hills, sandy soils, dendritic drainage patterns and swampy floodplains. The ground elevations range on PAFB from 170 to 280 feet above mean seal level. The ground elevations for the project area range from 200 to 217 feet above mean sea level. Ground contours have been altered by construction of runway, parking aprons, and roadways. Water in the project area flows northward to Tank Creek and eventually to the Little River system. (USGS, 1989)

The dominant geological formation associated with PAFB is the Middendorf Formation, dating to the Cretaceous age. Above the Middendorf Formation, a thin layer of Quaternary alluvium sediments may occur in the river and creek beds as younger fluvial and swamp deposits. Below the Middendorf Formation is the Cape Fear Formation, also of the Cretaceous age. The Carolina Slate Belt, also of Cambrian age, lies below the Cape Fear Formation, approximately 90 feet below the surface.

Five soils types exist within the project area:

- **BaB** - Blaney loamy sand, 2-8% slopes, soil classifies as loamy, siliceous, thermic Arenic Hapludults
- **BdB** - Blaney loamy sand - Urban land complex, 2-8% slopes, soil classifies as loamy, siliceous, thermic Arenic Hapludults

State of North Carolina
Department of Environment,
Health and Natural Resources
Division of Solid Waste Management

James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
William L. Meyer, Director

February 7, 1996

MEMORANDUM

TO: Susan Wright

FROM: Bobby Lutfy BL

RE: Second Hydrogeologic Review Of The Transition Plan For The Fort Bragg MSW Landfill (Permit # 26-02)

The review of RS&H's September 7, 1995 submittal responding to my letter of May 30, 1995 indicates the hydrogeologic concerns in the Transition Plan for the Fort Bragg Landfill have been addressed in a satisfactory manner. With these revisions the Local Area Study and Water Quality Monitoring Plan portions of the Transition Plan appear generally satisfactory. Therefore based upon the hydrogeologic review, the Fort Bragg Transition Plan can be approved.

It should be noted that approval of the Transition Plan does not include approval of the sampling reports. These documents are subject to separate review by Mark Poindexter and Larry Rose of our Groundwater Compliance Unit.

cc: Mark Poindexter